

# Firearm injuries in the United States

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Division of Violence Prevention



## Firearm violence is a public health problem

- ❑ 645 firearm deaths and 1,565 more injuries each week
- ❑ Firearm homicide: 2<sup>nd</sup> leading cause of injury death ages 10-24
- ❑ Firearm suicide: 3<sup>rd</sup> leading cause of injury death for all persons over 35
- ❑ Understanding the nature and extent of the problem is key first step to prevention



# **METHODS**

## Case definition

### Firearm Injury

A gunshot wound or penetrating injury from a weapon that uses a powder charge to fire a projectile

*Excludes: Gunshot wounds from air-powered, gas-powered, BB and pellet guns, as well as non-penetrating injuries associated with firearms (e.g., “pistol-whipping”)*

# Data source: Fatal injuries

## □ CDC's National Vital Statistics System (NVSS)\*

- Death certificate data
- Known intent (e.g., homicide, suicide, unintentional)
- Demographics
- Geographic region
- Years: 1993-2012 (trends); 2010-2012 (descriptives)

\* Accessed via Web based Injury Statistics Query and Reporting System (WISQARS)

The image shows a detailed U.S. Standard Certificate of Death form. It is divided into several sections with specific instructions for completion. Key sections include:

- DECEASED:** Fields for decedent's name, sex, date of death, social security number, age, date of birth, and place of birth.
- DECEASED'S RESIDENCE:** Fields for facility name, city, town, or location, and county.
- DECEASED'S PERSONAL INFORMATION:** Fields for marital status, surviving spouse, decedent's usual occupation, kind of business/industry, residence state, county, city, town, or location, street and number, inside city ZIP code, and decedent's education.
- PARENTS:** Fields for father's and mother's names.
- INFORMANT:** Fields for informant's name and mailing address.
- DISPOSITION:** Fields for method of disposition (burial, cremation, donation, etc.) and place of disposition.
- PROFESSING PHYSICIAN ONLY:** Fields for signature and title of the certifying physician.
- CAUSE OF DEATH:** A detailed section for describing the immediate cause, underlying cause, and other significant conditions contributing to death.
- MANNER OF DEATH:** Fields for manner of death (natural, accident, suicide, homicide, pending investigation) and date, time, and place of injury.
- CERTIFIER:** Fields for the certifier's name, title, signature, and date signed.
- REGISTRAR:** Fields for the registrar's signature and date filed.

## Data source: Nonfatal injuries

- **National Electronic Injury Surveillance System (NEISS)\*\***
  - Probability sample of N=99U S hospitals with emergency department
  - Injury intent (e.g., assault, self-harm, unintentional)
  - Select demographics
  - Disposition
  - Years: 1993-2012 (trends); 2010-2012 (descriptives)



\*\* Accessible due to partnership between CDC and Consumer Products Safety Commission. Limited NEISS data available online via WISQARS.

# Trend analyses



- ❑ **Trends across years 1993-2012 were analyzed**
  - SAS/Joinpoint regression analysis
  
- ❑ **Analyzed separately for fatal and nonfatal injuries**
  
- ❑ **Analyzed by intent**
  - Suicide/self-harm
  - Homicide/assault
  - Unintentional

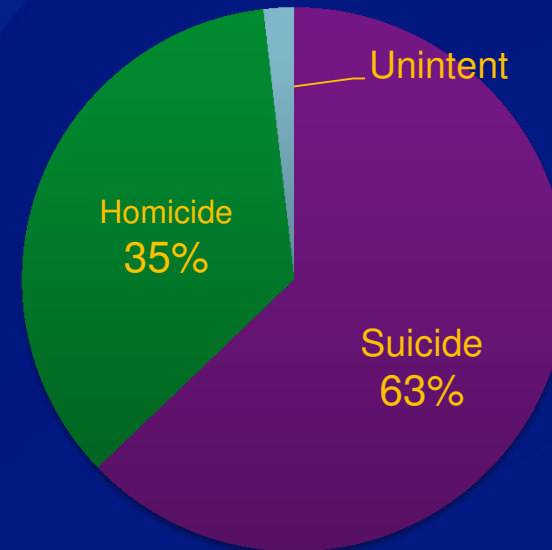
# RESULTS



# Extent of firearm injuries and deaths

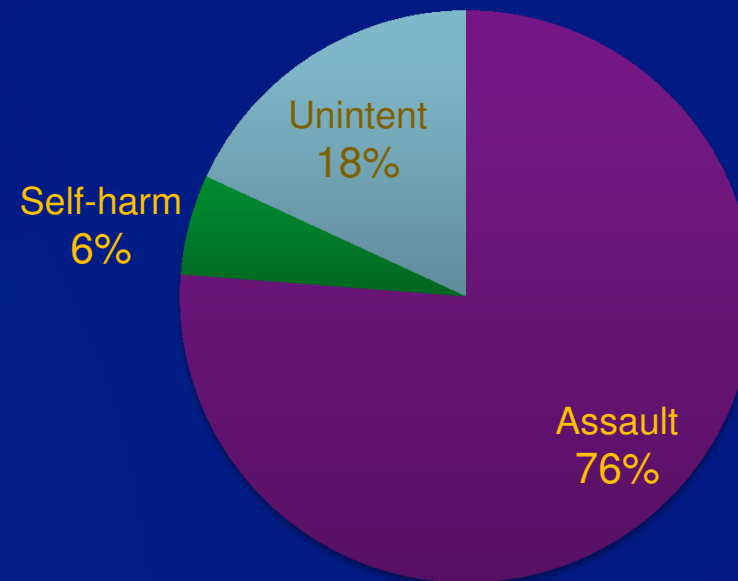
## Deaths

- ❑ Average of N=32,529 firearm deaths per year<sup>±</sup>
- ❑ Age-adjusted rate: 10.2 per 100,000



## Injuries

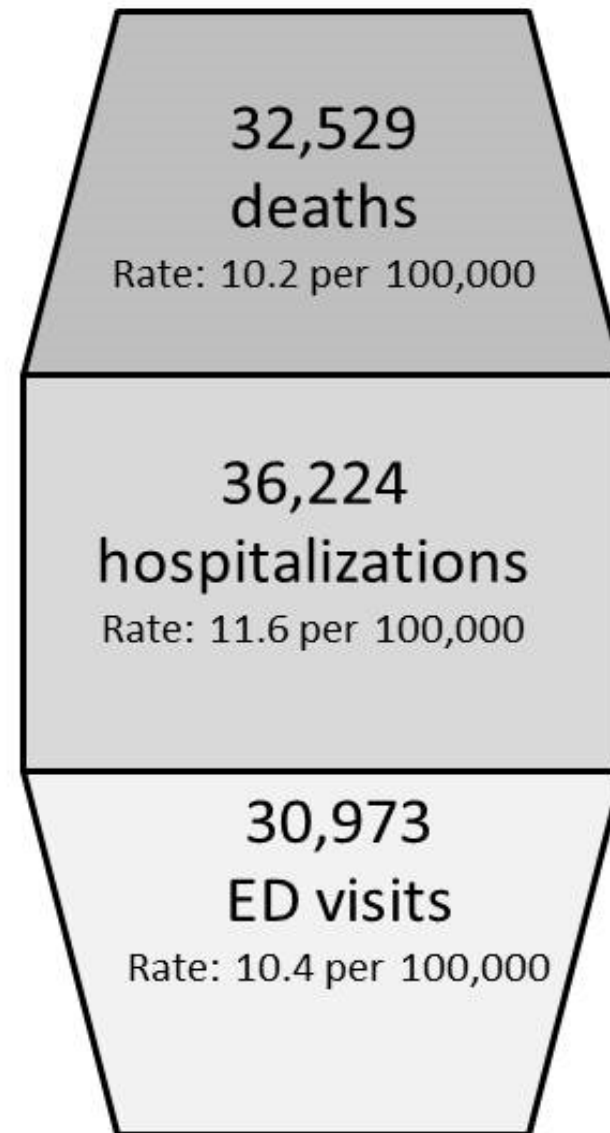
- ❑ Average of N=67,197 firearm injuries per year<sup>±</sup>
- ❑ Age-adjusted rate: 21.6 per 100,000



<sup>±</sup>Rates and counts represent annualized averages for years 2010-2012

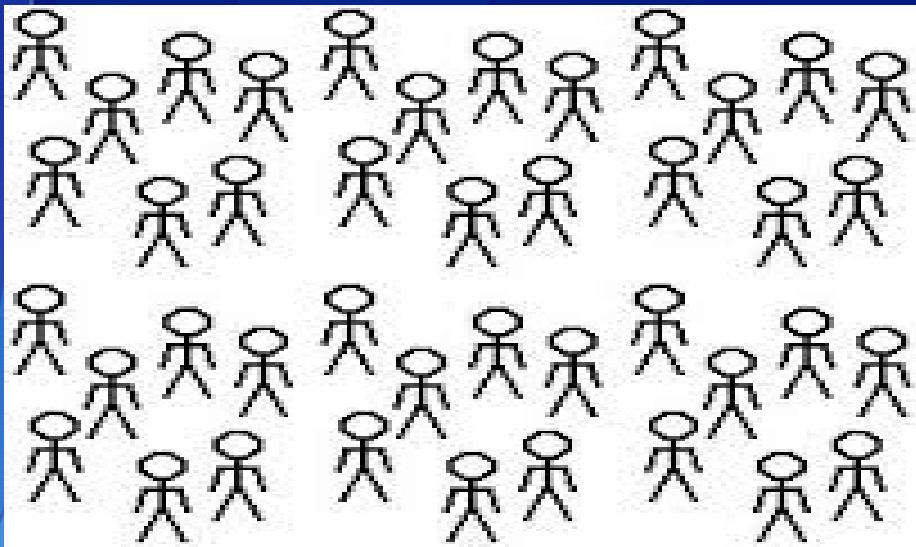
## Injury “tower”

- ❑ Unlike typical injury pyramid
- ❑ Proportion of deaths to hospitalizations to outpatient treatment fairly even
- ❑ Case fatality rates high, particularly for self-directed injuries



# Who is most at risk for firearm injuries?

- ❑ Males
- ❑ Young people
- ❑ Non-Hispanic blacks
- ❑ Non-Hispanic whites
- ❑ American Indian/Alaska Natives



# Who is most at risk for firearm injuries?

- ❑ **Males →**
  - 86% of firearm deaths; 90% of firearm injuries
  - Rate of deaths 6.3 times female rate (18.1 vs. 2.8)
  - Rate of injuries 8.3 times female rate (38.4 vs. 4.6)
  - 7:1 rate ratio for firearm suicides
  - 5:1 rate ratio for firearm homicides
- ❑ **Young people**
- ❑ **Non-Hispanic blacks**
- ❑ **Non-Hispanic whites**
- ❑ **American Indian/Alaska Natives**

# Who is most at risk for firearm injuries?

- ❑ Males
- ❑ Young people →
  - Ages 25-34 have the highest rate of deaths (15.1)
  - Ages 15-24 have the highest rate of injuries (65.6)
  - Firearm homicide/assault and unintentional firearm deaths and injury rates highest among 15-24 year olds (range: 22.6-47.5)
  - However, rates of firearm suicide **tend to increase with age**, are highest for persons over 65 (10.3)
- ❑ Non-Hispanic blacks
- ❑ Non-Hispanic whites
- ❑ American Indian/Alaska Natives

# Who is most at risk for firearm injuries?

- ❑ **Males**
- ❑ **Young people**
- ❑ **Non-Hispanic blacks**
  - **Highest rate of firearm deaths overall (18.1)**
  - **Firearm homicide rates (14.8) 10-15 times higher than rates for non-Hispanic Asian/Pacific Islander and white groups**
  - **Black youth aged 15-24 had highest homicide rate (38.7), almost 20 times rate for white counterparts**
- ❑ **Non-Hispanic whites**
- ❑ **American Indian/Alaska Natives**

# Who is most at risk for firearm injuries?

- ❑ Males
- ❑ Young people
- ❑ Non-Hispanic blacks
- ❑ Non-Hispanic whites
  - Highest rates of firearm suicide (9.2), 2.9-6.3 times higher than non-Hispanic blacks, Asian/Pacific Islanders, Hispanics
- ❑ American Indian/Alaska Natives

# Who is most at risk for firearm injuries?

- ❑ Males
- ❑ Young people
- ❑ Non-Hispanic blacks
- ❑ Non-Hispanic whites
- ❑ American Indian/Alaska Natives
  - Second highest rate of firearm suicide (7.8)
  - Highest rate of unintentional firearm deaths (0.3), but comparable to rates for non-Hispanic blacks and whites (both 0.2)

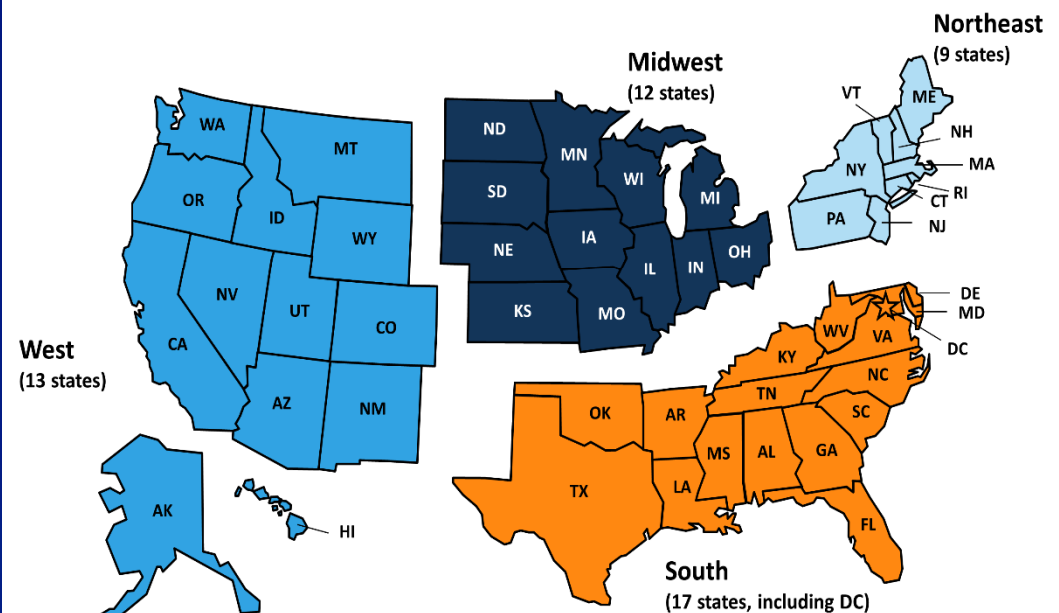


# Where do most firearm deaths occur?

- South had highest % and rates (46%; rate:12.6)
  - Firearm homicide rate: 4.5
  - Firearm suicide rate: 8.8
  - Unintentional firearm death: 0.3
- West had second-highest firearm suicide rate: 7.6
- Northeast had lowest % and rates (11%; rate: 6.4)

Figure 1

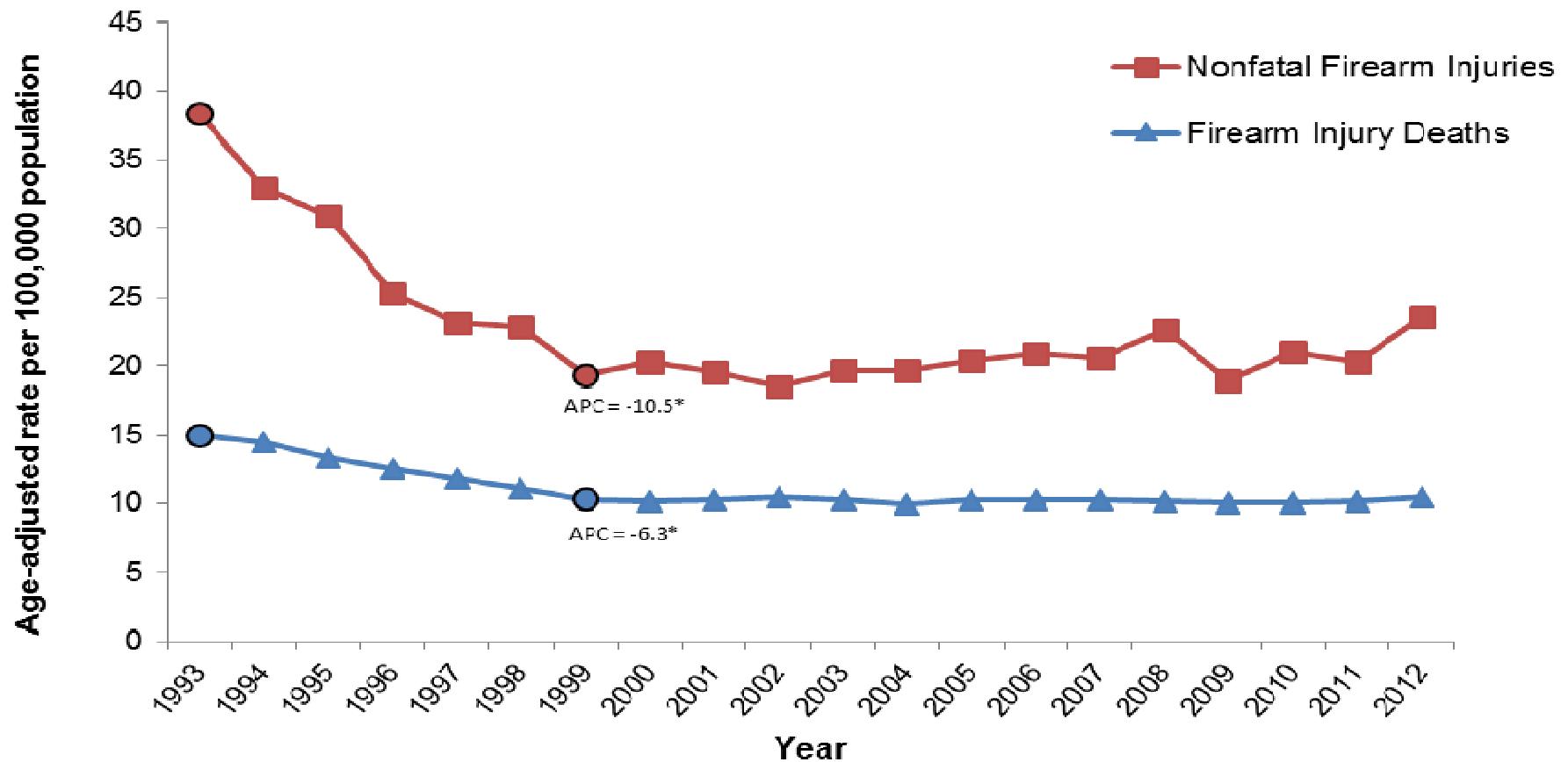
## Census Regions and Divisions of the United States



SOURCES: [http://www.census.gov/geo/maps-data/maps/pdfs/reference/us\\_regdiv.pdf](http://www.census.gov/geo/maps-data/maps/pdfs/reference/us_regdiv.pdf)

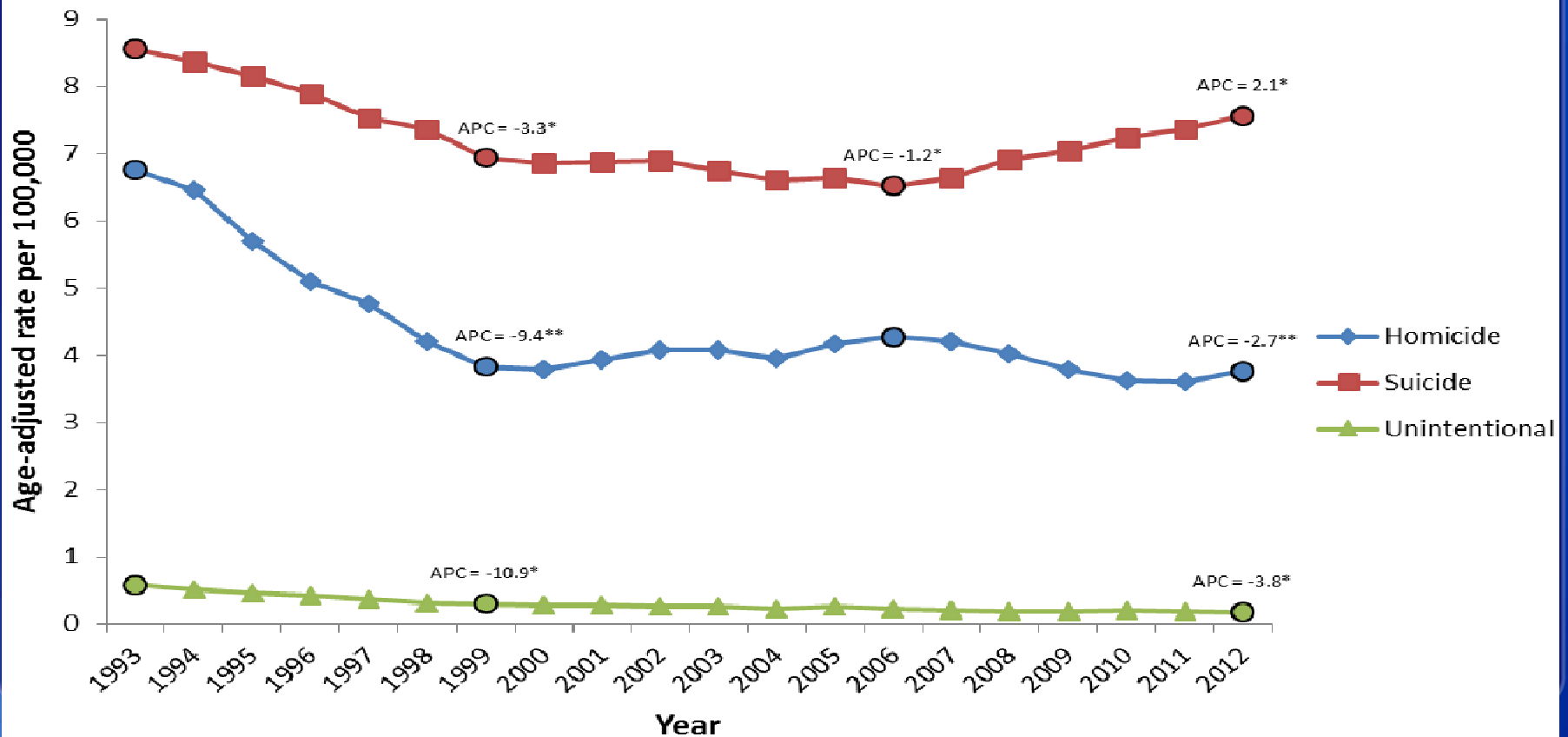
# Trends: Overall

- Nonfatal firearm injury rates declined 50% from 1993-1999
- Firearm death rates declined 31% from 1993-1999



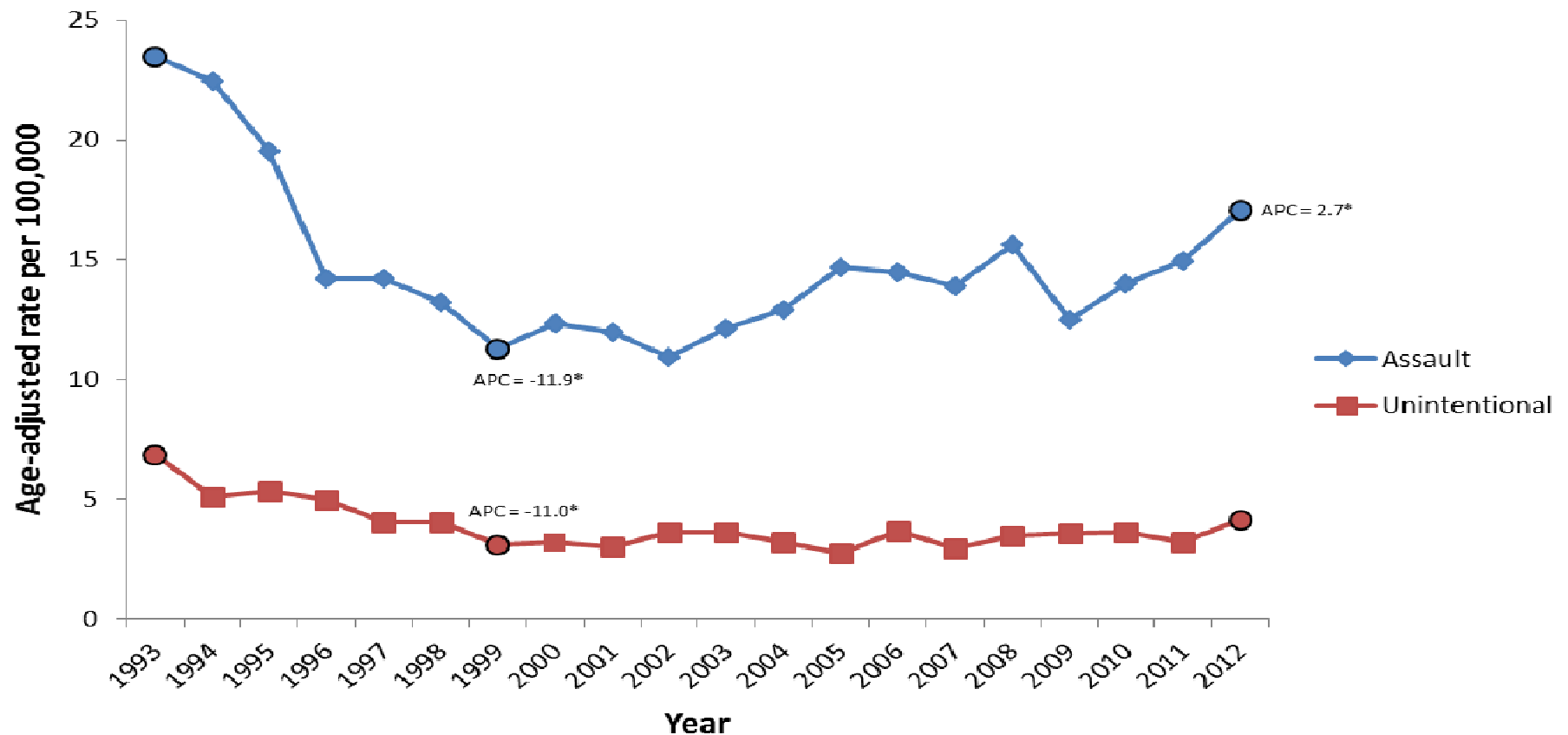
# Trends: Deaths

- Firearm homicide and unintentional rates declined 48% 1993-1999, and declined 12% 2006-2012
- Firearm suicide rates declined 20% 1993-1999, and declined 6% 1999-2006; increased 17% 2006-2012



# Trends: Nonfatal injuries

- Assault-related firearm injuries declined 52% 1993-1999, but increased 52% 1999-2012
- Unintentional firearm injury rates declined 54% 1993-1999



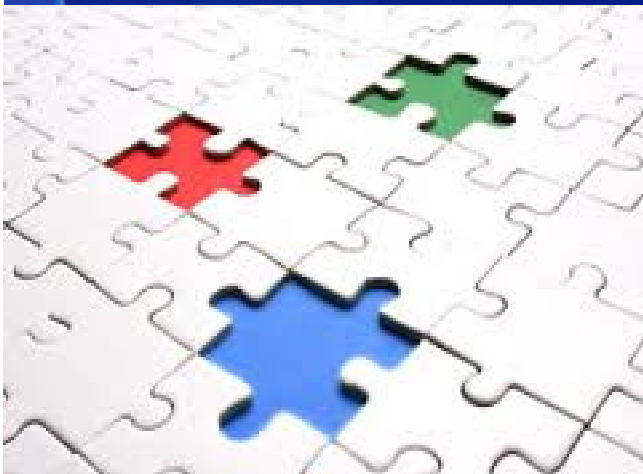
# **DISCUSSION**

## Summary

- ❑ Findings highlight magnitude and importance of the problem of firearm injuries, which affect over 100,000 persons in U.S. per year
- ❑ Over 60% of all firearm deaths are suicides
- ❑ Nearly 70,000 people each year suffer firearm injuries, often with long term consequences
- ❑ Disproportionately impact males, younger age groups, and racial/ethnic minorities
- ❑ Rates of firearm injuries and deaths have generally declined, but firearm suicides and assaults have recently increased

## Limitations

- ❑ Limited information about context from data sources
- ❑ Potential misclassification of race/ethnicity in death certificate data
- ❑ Missing race/ethnicity data in NEISS precluded examination of firearm injury by race/ethnicity
- ❑ Nonfatal firearm injuries treated in settings other than emergency or inpatient clinics not included



## Conclusion

- ❑ Firearm injuries contribute substantially each year to premature death, illness, and disability
- ❑ Human toll includes physical and mental health of victims and communities
- ❑ Understanding nature, magnitude and health impact is only the first step toward prevention





# Thank you.

**For more information please contact Centers for Disease Control and Prevention**

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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